EXHIBIT I

Docket No.: 0425-1218PUS1

(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Tetsuya OKANO et al.

Application No.: 10/551,654

Confirmation No.: 5662

Filed: July 10, 2006

Art Unit: 1616

For: A COMPOSITION FOR PRODUCTION OF A

STERILIZER AND A PROCESS FOR PRODUCING ORGANIC PERACID

Examiner: A. L. Fisher

DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Sir:

I, Noboru Matsuo, hereby declare as follows:

I am one of the co-inventors of the invention as described and claimed in the aboveidentified patent application.

I have carried out additional examples myself or under my direct supervision. Test procedures and results are shown below.

Side-by-Side Comparison between the Present Invention and the Primary Reference

The Examiner has cited U.S. Patent No. 5,827,447 to Tamura et al. (hereinafter, "Tamura '447") as the primary reference in a rejection under 35 U.S.C. § 103(a). I consider Example 11 of Tamura '447 to be the closest example to the present invention.

Enclosed herewith is Table A, which shows inventive Example 3-3 and Tests 1 and 2 as comparative examples. Test 1 was carried out using the same materials and methods as disclosed for Example 11 of Tamura '447. Test 2 was carried out using the same materials and methods as disclosed for Example 11 of Tamura '447, except triacetine was used in place of NOBS.

The obtained products were evaluated in the same way as Example 3-3 of the present specification. The results of all three examples are shown in Table A.

As shown in Table A, the number of remaining microorganisms with the inventive example is much less than the number with the comparative examples. As such, the present invention provides unexpectedly superior results.

Side-by-Side Comparison between the Present Invention and the Secondary Reference

The Examiner has cited U.S. Patent No. 5,869,440 to Kobayashi et al. (hereinafter, "Kobayashi '440") as the secondary reference in a rejection under 35 U.S.C. § 103(a). I consider Comparative Example 4 of Kobayashi '440 to be relative to the present invention.

Enclosed herewith is Table B, which shows inventive Example 3-3 and continued Example 3-3 with changed reaction temperatures and reaction times and Test 3 and continued Test 3 with changed storage temperatures and storage terms as comparative examples.

Test 3 was carried out using the same materials and methods as disclosed for Comparative Example 4 of Kobayashi '440, except changed storage temperatures and storage terms.

The obtained products were evaluated in the same way as Example 3-3 of the present specification. The results are shown in Table B.

As shown in Table B, the number of remaining microorganisms with the inventive example is much less than the number with the comparative examples. As such, the present invention provides unexpectedly superior results.

Docket No.: 0425-1218PUS1

Application No. 10/551,654

The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S. Code 1001 and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

By: <u>Noboru matsuo</u> Date: <u>Augusto 29,2010</u>.

Noboru Matsuo

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Table A

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components	used materials	Example 3-3 of USSN 10/551654	Test 1 Example 11 of Tamura et al.	Test 2
Betain surfactant*			10.0	10.0
(4)	Triacetín	2.0		2.0
(V)	NOBS	_	2.0	1
(B)	H2O2	1.5	5.0	5.0
Organic phophonic	HEDP**	0.1	-	
acid (Purity)	EDTMP***	•	0.1	0.1
Alkaline pH adjusting agent	NaOH	2.0		
Acidic pH adjusting	Phosphoric acid(85%)	5.0		•
agent	Sulfuric acid	1	very small amount	very small amount
Total		110.0	100.0	100.0
(A)/(B) molar ratio		0.52	0.04	90'0
Organic peracid conc	Organic peracid concentration(ppm) after preparation	27000	200	200
pH of ageous solution	pH of ageous solution for sterilization (25°C)	3.7	2.0	2.0
Number of remaining	Bacillus cereus IFO13494	<50	1.8×10^7	1.5×10^7
mioroorganisms	Bacillus subtilis var. niger	<50	2.6×10^7	2.4×10^{7}

Note: * is softazoline LSB. ** is Dequest 2010. *** is Dequest 2046 "1.5" as the amount of H2O2 of Example 3-3 is equivalent to "4.3 g" of Table 10 of the instant application. "4.3 g" of Table 10 is the amount of the 35 wt.% aqueous solution of H2O2. 4.3 g x 0.35% is equal to 1.5.

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lable B											
			NSSN	USSN 10/551654				Koba	Kobayashi et al.		
							Test 3,				
<u> </u>	components	Example 3-3					Compa-				
							Example 4				
(A)	Triacetin	5.0					2.00 **				
(B)	H2O2	1.5		•			2.75 **				
Organic		į									
phosphonic acid	HEDP*	0.1				1					
Alkali pH	NaOH	2.0	4.4	1		0.00			the same o	the same components	
adjusting agent	sodium ortho-silicate		те заше	сопролен	the same components as Example 5.3		1.5 **		as T	as Test 3	
Acid pH											
adjusting agent	85% phosphoric acid	5.0									
Total		110.0					100.00				
(A) / (B) molar ratio	io	0.52	٠				0.11				
at the	Reaction temperature	25°C~33°C	ţ	1	1	50°C			ĺ		
first step	Reaction time	10 minutes	120 minutes	1 dav	5 davs	5 days					
anitanamat notalog door to annual	on temperature						25°C	1	ţ	1	50°C
Condition of Kobayashi					j	!		120			
	term						Just after	minutes	1 day	5 days	5 days
Concentration of perac	Concentration of peracid after preparation (ppm)	27000	11000	1500	150	0≑	13000	190	o <u></u> ≒	0 ≑	0 ⊪
pH of aqueous solutor	bH of agueous soluton for starilization (25°C)	3.7	3.7	3.1	3.0	3.0	10.5	9.5	9.1	8.9	8.9
Number of remaini	Number of remaining B.cereus JFO 13494	20	\$\$ \$30	1	9.8×10 ⁶	1.0×10 ⁷	1.5×10 ⁷	8.4×10 ⁶	1	1.2×10 ⁷	9.2×10 ⁸
(CFU/mL)	B,subtillis var.niger	<50	¢20	1	2.9×10 ⁷	3.3×107	4.0×10 ⁷	3.1×10^{7}	-	3.8×10 ⁷	2.6×10 ⁷
			·		})
				•	•			4.04.		The state of the s	1.04

sterilizing test with a diluted aqueous solution having an organic peracid's concentration of 3000 ppm.

sterilizing test sterilizing test with a starting aqueous solution.

sterilizing test with a starting aqueous solution.

*: is Dequest 2010

** the amounts of (A), (B) and Alkali pH adjusting agent are recited for 100 parts by weigh of the total of (A) and (B). — means the same as the left-sided term

EXHIBIT II

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Noboru Matsuo, hereby declare as follows:

I am one of the co-inventors of the invention as described and claimed in the above-identified patent application.

I have carried out additional examples myself or under my direct supervision. Test procedures and results are shown below.

Example 5-9-a and Example 5-10-a

Example 5-9 and Example 5-10 were experimentally followed. Test conditions and test results are described in Table C, including additional conditions, hereto attached. An alkali agent and an acid agent were the alkaline pH adjusting agent and the acidic pH adjusting agent used in Example 1 of the instant application. The glycerin fatty acid ester had a fatty acid group having 8

carbon atoms and was the same as used in Example 1 of the instant application..

It is noted that Example 5-9-a is superior to Example 5-10-a by about 18 % in view of the reaction efficiency of production of the organic peracid.

The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S. Code 1001 and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

By: Noborn Maisno Date: August 29, 2010.

Noboru Matsuo

Attachment: Table C

efficiency of reaction peracid (C7H15COOOH: MW=160) concentration amount (C) (B) (S) Alkali agent (initiator)+
acid agent (terminating agent) water peracid/(A) glycerin fatty acid ester H2O2 4500 (ppm) 0.3163 (g) 10 (g) 70.29 (g) 5 (g) 0.29 (g) 55 (g) Ex5-9-a 0.0229 (mol) 0.0030 (mol) 0.0863 0.00198 (mol) 5500 (ppm) 0.4306 (g) 10 (g) 78.29 (g) 8 (g) 0.29 (g) 60 (g) Ex5-10-a 0.0733 0.00269 (mol) 0.0367 (mol) 0.0030 (mol)

Table C

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a

Ethylene glycol monoacetate Coligo							Prod	Products of the invention	he invent	ion			
hycol mornoacetate 2g (0.0192) Condition 2g (0.0114) Condition Condition </td <td></td> <td></td> <td></td> <td>1-1</td> <td>1-2</td> <td>1-3</td> <td>1-4</td> <td>1-5</td> <td>1-6</td> <td>1-7</td> <td>1-8</td> <td>1-9</td> <td>1-10</td>				1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10
yool diacetate Q 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Ethylene		2g (0.0192)					4 4 4	1 4 9 9 4 4 4	3g (0.0288)		
hritol tetraacetate		Ethylene	7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		2g (0.0137)					0 0 0 0 0 0	# # # # # # # # # # # # # # # # # # #	3g (0.0205)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
hritol tetraacetate (0.0092) (0.0066)	7	Diacetin		† 4 4 7 7 8 8 8 8 9 9 9		2g (0.0114)				3			3g (0.0170)
rittol tetraacetate 2g 2gg 286g	گ oueu	V Triacetin		*	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		2g (0.0092)				, , , ,	4 9 9 3 4 9	**************************************
γ1-β-D-glucose 2g 4g 2g 4g 2g 4g 286g 2.86g 2.80g 2.80g 2.80g	cout	Pentaery	thritol tetraacetate	1 b t t t t		6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		2g (0.0066)			# # # # # # # # # # # # # # # # # # #		1
fatty acid ester 2.86g 2	guibai	Pentaac	etyl- eta -D-glucose	1 d 4 7 5 6 6 4 1	7 7 8 4 4 4 1 1 8 6 6				2g (0.0051)		3	1 1 2 3 4 1	1 3 5 6 8 8 8
drogen peroxide (35 wt%) 2.86g 2.80g 2.80g 2.80g 2.80g 2.80g 2.80g 2.80g 2.80g 2.8	10dwd	Glycerin	e fatty acid ester	 	1 1 1 1 1 1 1 1 1 1	} } 8 8 8 8 8 8 8 8				2g (0.0092)			
0.65 0.47 0.39 0.31 0.22 0.17 0.31 0.98 0.70 4.0 4.0 4.0 4.0 4.0 4.0 4.9 4.9 4.9 6800 17000 10000 22500 4500 25800 2700 9800 21600 6800 17000 9600 20300 4500 24100 2700 9600 21000 6800 1700 9600 20300 4500 24100 2700 9600 21000 6800 17500 9800 17500 9900 19800 19800 6800 15200 8200 17500 3900 19800 2500 9300 18400 89.9 89.4 82.0 76.4 86.7 76.7 74.1 91.8 85.6 1.53 1.07 1.28 1.07 1.11 1.15 3.20 1.02 0.717	Co.	Aqueous h	ydrogen peroxide (35 wt%)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)		2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)
0.65 0.47 0.39 0.31 0.22 0.17 0.31 0.98 0.70 4.0 4.0 4.0 4.0 4.0 4.0 4.9 4.9 4.9 6900 17000 10000 22900 4500 25800 2700 9800 21500 6800 17000 9600 20300 4500 24100 2700 9600 21000 6600 16800 9100 18600 4300 22000 2500 9300 19800 6200 15200 8200 17500 3900 19800 2000 18400 89.9 89.4 82.0 76.4 76.7 74.1 91.8 85.6 1.53 1.07 1.28 1.07 1.11 1.15 3.20 1.02 0.717	_ = _	3) Sodium	percarbonate					3 3 1 1 1 2	1 1 1 1 1 1 1	1			
0.65 0.47 0.39 0.31 0.22 0.17 0.31 0.38 0.70 4.0 4.0 4.0 4.0 4.0 4.0 4.9 4.9 4.9 6900 17000 10000 22900 4500 25800 2700 9800 21500 6800 17000 9600 20300 4500 24100 2700 9600 21000 6600 16800 18600 4300 22000 2500 9300 19800 6200 15200 8200 17500 3900 19800 18400 89.9 89.4 82.0 76.4 76.7 74.1 91.8 85.6 1.53 1.07 1.28 1.07 1.11 1.15 3.20 1.02 0.717	••••	Sodium	perborate										
4.0 4.0 4.0 4.0 4.0 4.9 <td></td> <td> 3</td> <td>)/(B) molar ratio</td> <td>0.65</td> <td>0.47</td> <td>0.39</td> <td>0.31</td> <td>0.22</td> <td>0.17</td> <td>0.31</td> <td>0.98</td> <td>0.70</td> <td>0.58</td>		 3)/(B) molar ratio	0.65	0.47	0.39	0.31	0.22	0.17	0.31	0.98	0.70	0.58
6900 17000 10000 22900 4500 25800 2700 9800 21500 6800 17000 9600 20300 4500 24100 2700 9600 21000 t 6600 16800 9100 18600 4300 22000 2500 9300 19800 t 6200 15200 8200 17500 3900 19800 18400 18400 89.9 89.4 82.0 76.4 86.7 76.7 74.1 91.8 85.6 1.53 1.07 1.28 1.07 1.11 1.15 3.20 1.02 0.717			pH(25°C)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.9	4.9	4.9
6800 17000 9600 20300 4500 24100 2700 9600 21000 6600 16800 9100 18600 4300 22000 2500 9300 19800 1 6200 15200 8200 17500 3900 19800 2000 18400 89.9 89.4 82.0 76.4 86.7 76.7 74.1 91.8 85.6 1.53 1.07 1.28 1.07 1.11 1.15 3.20 1.02 0.717			Just after pH adjustment	0069	17000	10000	22900	4500	25800	2700	0086	21500	16100
6600 16800 9100 18600 4300 22000 2500 9300 19800 t 6200 15200 8200 17500 3900 19800 2000 9000 18400 89.9 89.4 82.0 76.4 86.7 76.7 74.1 91.8 85.6 1.53 1.07 1.28 1.07 1.11 1.15 3.20 1.02 0.717	Orga	inic peracio	1 30 minutes after pH adjustment	6800	17000	0096	20300	4500	24100	2700	0096	21000	15700
t 6200 15200 8200 17500 3900 19800 2000 9000 18400 89.9 89.4 82.0 76.4 86.7 76.7 74.1 91.8 85.6 1.53 1.07 1.28 1.07 1.11 1.15 3.20 1.02 0.717	Cou	centration (onm)	60 minutes after pH adjustment	0099	16800	9100	18600	4300	22000	2500	9300	19800	14200
89.9 89.4 82.0 76.4 86.7 76.7 74.1 91.8 85.6 1.53 1.07 1.28 1.07 1.11 1.15 3.20 1.02 0.717			120 minutes after pH adjustment	6200	15200	8200	17500	3900	19800	2000	9000	18400	12300
1.53 1.07 1.28 1.07 1.11 1.15 3.20 1.02 0.717	De	gree of ren	naining organic peracid (%)	89.9	89.4	82.0	76.4	86.7	76.7	74.1	91.8	85.6	76.4
		H ₂ O ₂ /e	ster group molar ratio	1.53	1.07	1.28	1.07	1.11	1.15	3.20	1.02	0.717	0.865

						Pro	Product of the invention	le inventi	uo			
			1-11	1-12	1-13	1-14	1-15	1-16	1-17	1-18	1-19	1-20
	Ethylen	Ethylene glycol monoacetate					5g (0.0481)					1 2 3 4 1 1
	Ethylen	Ethylene glycol diacetate	b 0 0 1 1 1 1	7 4 4 7 8 8 8 6 7 7	7 1 4 4 5 7 8 8 9 8 8 9 8 9 8 9 9 9 9 9 9 9 9 9 9			5g (0.0342)		4		1 2 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
s.	Diacetine	16	* * * * * * * * * * * * * * * * * * *	1 1 1 1 1 1 1 1 1 1 1 1 1					5g (0.0284)			1 1 1 1 1 1
	(A) Triacetine	1	3g (0.0138)							5g (0.0229)	\$ 3 4 1 1 6	1
comp	Pentaer	Pentaerythritol tetraacetate	† = = = = + + + + + +	3g (0.0099)				8 4 0 0 0 0 0	4 9 4 4 1		5g (0.0164)	
anibn	Pentaa	Pentaacetyl- eta -D-glucose	P B b b b b b b b b b b b b b b b b b b		3g (0.0077)			\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	j 1 1 1 1 1 1			5g (0.0128)
nodw	Glyceri	Glycerine fatty acid ester	† † # # † †			3g (0.0138)						
တ	Aqueon	Aqueous hydrogen peroxide (35 wt%)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)
	(B) Sodium	(B) Sodium percarbonate				1	1 0 3 3 1 1 1	11 5 4 4 7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	•			; ; ;
	Sodium	Sodium perborate										
		(A)/(B) molar ratio	0.47	0.34	0.26	0.47	1.64	1.16	0.97	0.78	0.56	0.44
		pH(25°C)	4.9	4.9	4.9	4.9	3.8	3.8	3.8	3.8	3.8	3.8
		Just after pH adjustment	25400	0089	28700	4100	12300	22000	23200	31700	9300	33500
ŏ	Organic peracid		24300	6100	27400	3900	11700	20500	22200	29900	8600	32000
ប័	concentration (ppm)	60 minutes after pH adjustment	23600	5700	26800	3700	10500	18800	21000	27600	7800	30600
		120 minutes after pH adjustment	20500	5000	24900	3500	10000	17800	20300	25800	7200	28100
	Degree of	Degree of remaining organic peracid (96)	80.7	73.5	86.8	85.4	81.3	80.8	87.5	81.4	77.4	83.9
	H ₂ O ₂ ,	H ₂ O ₂ /ester group molar ratio	0.710	0.742	0.764	2.13	0,611	0.430	0.518	0.428	0.448	0.459

						Pro	Product of the invention	ie inventi	uo			-
			1-21	122	1-23	1-24	1-25	1-26	1-27	1-28	1-29	1-30
1		Ethylene glycol monoacetate	2g (0.0192)					6 7 9 6 0	, , , , , , , , , , , , , , , , , , ,	•		4 P b 2 ¢ P
		Ethylene glycol diacetate	0 9 5 4 7 8 8 4 7	2g (0.0137)				1		3g (0.0205)		
S		Diacetin	# 6 6 4 7 P 8 8 8		2g (0.0114)				1 1 4 2 2 4	7 0 1 1 2 3 7	1	
Jueno	<u>₹</u>	(A) Triacetin	, II 6 6 6 7 1 1 I I I I I I I I I I I I I I I I I	1 7 7 1 1 1 4 4 7 8 8		2g (0.0092)				1	3g (0.0138)	
amoo		Pentaerythritol tetraacetate	 				2g (0.0066)		1			1
anibr		Pentaacetyl- β -D-glucose	7 6 6 7 2 1	, , , , , , , , , , , , , , , , , , ,	1 3 6 7 7 7 7			2g (0.0051)			-	3g (0.0077)
inodiii		Glycerine fatty acid ester			: :	0 1 1 1 1 1 1 1 1 1 1			2g (0.0092)			
ပ		Aqueous hydrogen peroxide (35 wt%									9 9 6 4 9 10 10 10 10 10 10 10 10 10 10 10 10 10	4 7 9 6 1 7
	9	(B) Sodium hydrogen percarbonate	4.55g (0.0294)	4.55g (0.0294)	4.55g (0.0294)	4.55g (0.0294)	4.55g (0.0294)	4.55g (0.0294)	4.55g (0.0294)			
		Sodium perborate						1 1 1 1 1 1 1		5.00g (0.0294)	5.00g (0.0294)	5.00g (0.0294)
	4	(A)/(B) molar ratio	0.65	0.47	0.39	0.31	0.22	0.17	0.31	0.70	0.47	0.26
		pH(25°C)	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.5	4.5
		Just after pH adjustment	7000	17500	11500	23100	4600	26200	2900	23000	23600	26700
O	rgar	Organic peracid 30 minutes after pH adjustment	9000	17000	0086	21500	4400	25100	2800	21600	21500	24300
_	Sonc	concentration 60 minutes after pH adjustment	6800	16200	9300	19800	4300	22500	2600	20100	19700	23900
		120 minutes after pH adjustment	6200	15000	8500	18600	3800	20000	2200	19200	18300	21300
	Deg	Degree of remaining organic peracid (%)	988.6	85.7	73.9	80.5	82.6	76.3	75.9	83.5	77.5	79.8
		H ₂ O ₂ /ester group molar ratio	1.53	1.07	1.28	1.07	1.11	1.15	3.20	0.717	0.710	0.764

						Prof	Product of the invention	e inventi	no			
			2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8	2-9	2-10
			-	7,	; 					200		
		Ethylene glycol monoacetate	2g (0.0192)					7 1 0 0 7		3g (0.0288)	-	1 3 4 1 5
	<u> </u>	Ethylene glycol diacetate	1 1 1 1 1 1 1 2	2g (0.0137)			3 6 7 4 4 8	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1		, , , , ,
		Diacetin	6 6 7 3 8 6 1	,	2g (0.0114)						\$ \$ \$ \$ \$ \$ \$	
atnəib	<u> </u>	(A) Triacetin			<u> </u>	2g (0.0092)					5g (0.0229)	
ərgni		Pentaerythritol tetraacetate	1 4 4 4 4	• • • • • • • • • • • • •			5g (0.0164)					1
anibn		Pentaacetyl-β-0-glucose	4		* * * * * * * * * * * * * * * * * * *			2g (0.0051)				5g (0.0128)
nodw		Glycerine fatty acid ester			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	t 1 1 1 1 1 1 1			5g (0.0229)			
၀၁		Aqueous hydrogen peracid (35 wt%	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)	2.86g (0.0294)
	(B)	(B) Sodium percarbonate						0 7 8 9 9)) ; ; 1	; ; ;		
		Sodium perborate	• • • • •	1 4 4 4 5 5 6 4								
		(A)/(B) molar ratio	0.65	0.47	0.39	0.31	0.56	0.17	0.78	0.98	0.78	0.44
		pH(25°C)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.9	3.8	3.8
	0	Organic peracid concentration (ppm)	5000	5000	4000	4000	4000	4000	4000	4000	4000	4000
2		Number of Bacillus subtilis	<u>8</u>	<50	<50	0\$>	<50	<50	150	<50	2 00	<50
, E	remaining	ining Bacillus oirculans	<50	<50	<50	450	<50	<50	200	<50	<50	<50
ê S	CFU,	(GFU/mL) Asperzilius niger	\$	<50	\\$50	<50	<50	<50	150	<50	<50	<50
		H ₂ O ₂ /ester group molar ratio	1.53	1.07	1.28	1.065	0.448	1.15	1.28	1.02	0.428	0.459

Table 7

					Pro	Product of the invention	e inventi	uo vo	9	2	c
		2-11	2-12	2-13	2-14	2-15	2-16	2-13	2-18	2-19	2-20
thylene	Ethylene glycol monoacetate	2g (0.0192)				1	1	# 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3g (0.0288)	1 4 4 5 5 7	
Ethylene	Ethylene glycol diacetate		2g (0.0137)				3 3 5	1 4 5 7 8 8	1	7	6 6 7 8
Diacetin	5 2 7 0 7 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	• • • • • • • • • • • • • • • • • • •		2g (0.0114)				# B A A A A A A A A A A A A A A A A A A	å 7 11 12 13 14 19 20 20 20 20 20 20 20 20 20 20 20 20 20	1 1 2 7 8	
(A) Triacetin	1	1	†		2g (0.0092)		9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	1 1 0 0 1 1 1 4		5g (0.0229)	4
Pentaer	Pentaerythritom tetraacetate	* * * * * * * * * * * * * * * * * * *				5g (0.0164)		1 6 7 7	2 1 2 2 2 4 4	1 1 2 3 1 1 1	7 1 1 1 1 1 1
Pentaac	Pentaacetyl – eta –D–glucose	7 2 2 4 4 7 7	4 T T T T T T T T T T T T T T T T T T T	1 1 4 6 6 4 4 4 4 4 4			2g (0.0051)			8 1 2 3 4 4 7 8	5g (0.0128)
Glyceri	Glycerine fatty acid ester	y F b h † † 7 } } !	4 7 8 5 6 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8					5g (0.0229)			
Aqueous (35 wt%)	Aqueous hydrogen peroxide (35 wt%)								4 5 2 6 9 4 6	1 1 1 1 1	1
Sodium	(B) Sodium percarbonate	4.55g (0.0294)	4.55g (0.0294)	4.55g (0.0294)	4.55g (0.0294)	4.55g (0.0294)	4.55g (0.0294)	4.55g (0.0294)			1
Sodium	Sodium perborate					7 2 3 4 7 7 8 8 8	4 7 11 11 14 4 4 4 4 4 5		5.00g (0.0294)	5.00g (0.0294)	5.00g (0.0294)
(S)	(A)/(B) molar ratio	0.65	0.47	0.39	0.31	0.56	0.17	0.78	0.98	0.78	0.44
	pH(25°C)	4.2	4.2	4.2	4.2	3.9	4.2	3.9	4.5	3.9	3.9
anic pera	Organic peracid concentration (ppm)	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Number of E	Bacillus subtilis	<50	2 00	<50	<50	<50	09>	200	<50	<50	<50
,	Bacillus circulans	420	\$20	<50	<50	(50	<50	200	2 20	<50	<50
	Aspergillus niger	<50	<50	<50	<50	(50	(50	250	<50	<50	<50
bonate/	percarbonate/ester group molar ratio	0 1.53	1.07	1.28	1.065	0.448	1.15	1.28	1.02	0.428	0.459

0.692

0.692

0.645

0.645

0.645

0.645

0.645

0.645

0.648

0.648

CPO

Bacillus subtilis var. niger

microorganisms (CFU/mL)

H₂O₂/ester group molar ratio

\$5

Table 10

Table 12

4.3g (0.0443) 27,000 25,500 28,000 29,500 (0.0128) (0.0128) 0.1g 0.29 **20** \$20 9-10 0.5g920 2.8 40 30,000 28,000 27,000 25,500 (0.0443)4.3g 0.1g2.1g 0.5g0.29 900 3,5 **20** \$20 6-9 28 (0.0443) (0.0443) (0.0443) (0.0443) 25,500 26,000 23,500 (0.0229)24,000 1,300 2.1€ 0.5g0.52 \$20 \$50 0.1g 2.8 5g 18,000 5g 5g 5g 5g (0.0229) (0.0229) 22,000 19,000 20,000 1,850 2.1g 0.5g 0.52 50 **S** 0.1g 7 6-7 6g 25,000 26,000 25,500 27,000 1,050 2.1g 0.1g 0.5g 0.52 **5**20 **S**20 ယ က 9-9 28 Example 25,000 24,000 26,000 25,500 1,350 5.0g 50 **6**50 0.52 0.1g 3.0 6-5 4 ı (0.0229) 18,000 19,000 20,000 22,000 1,900 0.1g 5.0g 550 \$50 0.52 <u>رن</u> 6-4 8 (0.0229) (0.0443) (0.0443) (0.0443) 26,500 26,500 25,000 27,000 1,050 0.1g \$ \$50 5.0g0.52 3.7 28 23,500 23,000 22,000 24,000 (0.0342)1,650 0.1g \$50 \$ 4.3g 2.1₫ 0.5g28 0.77 8-2 58 25,000 25,000 24,500 24,000 2g (0.0342)1,500 0.1g 2.1g 3.5 \$20 \$50 0.5g0.77 6-1 Bacillus cereus 1F013494 Bacillus subtilis var. niger Pentaacetyl- & -D-glucose Ethylene glycol diacetate Phosphoric acid(purity 85%) Aqueous hydrogen peroxide (35 wt%) Just after preparation 30 minutes later pH of aqueous solution for sterilization (25°C) Trisodium phosphoate Sulfuric acid (purity 98%) Organic phosphonic acid Sodium carbonate Sodium hydroxide 120 minutes later 60 minutes later Hydrogen peroxide concentration (ppm) Triacetin (A)/(B) molar ratio ust after preparation adjusting agent (net content) Number of remaining (net content) microorganisms (CFU/mL) Organic peracid Alkaline pH Acidic pH concentration adjusting Chelating agent agent 3 0 (Ebdd) Compounding ingredients

0.692

0.692

0.645

0.645

0.645

0.645

0.645

0.645

0.648

0.648

H₂O₂/ester group molar ratio

Table 23